Yeast Extract

**Definition of Yeast Extract**
When a yeast cell is inactivated, a natural digestion process called "autolysis" starts. During this process the yeast's own enzymes break down proteins and other parts of the cell. This causes the release of peptides, amino acids, vitamins and other yeast cell components which, once the insoluble components have been removed, is called "Yeast Extract".

The Food Chemical Codex defines Yeast Extract as follows: "Yeast Extract comprises the water soluble components of the yeast cell, the composition of which is primarily amino-acids, peptides, carbohydrates and salts. Yeast Extract is produced through the hydrolysis of peptide bonds by the naturally occurring enzymes present in edible yeast or by the addition of food-grade enzymes".

**The two main applications of Yeast Extract**

1. **Natural aromatic ingredient for savoury foods**
Yeast Extracts are increasingly used for their unique taste, which is the result of amino acids and small peptides formed out of the yeast protein by the autolysis process. They constitute a natural flavour ingredient, imparting delicate bouillon, meaty or cheesy notes and enhancing the taste for a wide range of food products: soups, sauces, meat and fish preparations, savoury mixes, etc.

2. **Source of nitrogen & growth factors for culture media**
Yeast Extracts are rich in nitrogen, vitamins and other growth stimulating compounds and therefore are used as an ingredient in media for the cultivation of microorganisms. These organisms are for example used in the production of antibiotics, biopharmaceuticals, vitamins, organic acids, dairy cultures, probiotics, etc.

**Production process of Yeast Extract**
The raw material is baker's or brewer's yeast. The yeast cells undergo the following treatments:
- Separation from the culture medium
- Opening of the cells: moderate heat treatment or salt addition which allows the conservation of the enzymes
- Autolysis: this step of the process is performed under mild conditions of pH and temperature; its duration depends on the type of yeast and to what extent the proteins have to be broken down
- Separation of the insoluble part such as Yeast Cell Walls from the water soluble components of yeast (mainly proteins, peptides, amino-acids, etc...) which constitute the Yeast Extract
- Concentration and pasteurisation of the Yeast Extract solution
- Packaging in pails, drums or totes for the liquid and paste forms (resp. 50 - 65 % and 70 - 80 % dry matters)
- or Spray drying and Packaging in bags, boxes, big bags for the powder forms, which can be in fine or granulated particles, or even oil coated to prevent the emission of dust.
Main components of Yeast Extract
The typical composition of Yeast Extract is (expressed on dry matters basis):
- total nitrogen content: 8 to 12 %, corresponding to a protein content of 50 to 75 %
- amino nitrogen content: 3.0 to 5.2 %
- total carbohydrate content: 4 to 13 %
- lipid content: none or very little.
Depending upon applications, salt can be added to Yeast Extract.

Regulatory status of Yeast Extract
In Europe, Yeast Extract is regulated by the European Directive 88/388 and classified as "natural flavouring preparation".

In North America, the Food & Drug Administration considers Yeast Extract as natural flavour (§21 CFR 101.22).